

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
1 April 2004 (01.04.2004)

PCT

(10) International Publication Number  
**WO 2004/026857 A3**

- (51) International Patent Classification<sup>7</sup>: **C07D 311/80**, A61K 31/352, A61P 29/00
- (21) International Application Number:  
PCT/GB2003/004078
- (22) International Filing Date:  
23 September 2003 (23.09.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
0222077.0 23 September 2002 (23.09.2002) GB
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Declaration under Rule 4.17:**  
— *of inventorship (Rule 4.17(iv)) for US only*
- Published:**  
— *with international search report*  
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*
- (88) Date of publication of the international search report:  
12 August 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: METHODS OF PURIFYING CANNABINOIDS FROM PLANT MATERIAL

(57) Abstract: The invention relates to methods of preparing cannabinoids in substantially pure form starting from plant material. Also described are substantially pure preparations of various cannabinoids and cannabinoid acids, and also extracts enriched in cannabinoids and cannabinoid acids.

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/04078

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07D311/80 A61K31/352 A61P29/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BEILSTEIN Data, CHEM ABS Data, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 365 416 B1 (ELSOHLY MAHMOUD A ET AL) 2 April 2002 (2002-04-02) cited in the application claim 1; examples 1-11	1-54,91
X	US 2002/086438 A1 (ELSOHLY MAHMOUD A ET AL) 4 July 2002 (2002-07-04) claim 1; examples 13-26 ----- -/--	1-54,91

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
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- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

27 April 2004

Date of mailing of the international search report

25. 06. 2004

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 03/04078

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GAONI Y ET AL: "THE ISOLATION AND STRUCTURE OF 1-TETRAHYDROCANNABINOL AND OTHER NEUTRAL CANNABINOIDS FROM HASHISH" JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, AMERICAN CHEMICAL SOCIETY, WASHINGTON, DC, US, vol. 93, 1971, pages 217-224, XP001095011 ISSN: 0002-7863 compounds Va and VI page 223, column 1, line 10 - line 35	1-54,91
X,P	WO 03/064407 A (GOODWIN NEIL JOHN ; MCHATTIE DEREK (GB); ARCHER NICOLAS JAMES (GB); GR) 7 August 2003 (2003-08-07) page 18, line 24 - line 27; example 4	48-54
X,P	WO 03/063847 A (GW PHARMA LTD ; WHITTLE BRIAN (GB); JAVID FARIDEH AFSHIN (GB)) 7 August 2003 (2003-08-07) page 28, line 17 - line 27	35-47
X	DATABASE BIOSIS 'Online! BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US; 1992, LEHMANN T ET AL: "A NEW CHROMATOGRAPHIC METHOD FOR THE ISOLATION OF LEVO-DELTA-9-TRANS TETRAHYDROCANNABINOLIC ACID A" XP002278232 Database accession no. PREV199294066780 abstract & PHYTOCHEMICAL ANALYSIS, vol. 3, no. 2, 1992, pages 88-90, ISSN: 0958-0344	28-34
X	DATABASE BIOSIS 'Online! BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US; 1973, PARIS M R ET AL: "ISOLATION OF 2 CONSTITUENTS CANNABIDIOLIC-ACID AND TETRA HYDRO CANNABINOLIC-ACID FROM CANNABIS-SATIVA BY PREPARATIVE THIN LAYER CHROMATOGRAPHY" XP002278233 Database accession no. PREV197410013566 abstract & ANNALES PHARMACEUTIQUES FRANCAISES, vol. 31, no. 3, 1973, pages 186-188, ISSN: 0003-4509	35-47

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB 03/04078

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
1-54, 91
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-27 and 91

a method of obtaining purified cannabinoids  
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2. claims: 28-34

delta-9-tetrahydrocannabinolic acid (THCA)  
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3. claims: 35-47

cannabidiolic acid (CBDA)  
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4. claims: 48-54

delta-9-tetrahydrocannabinol (THC)  
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5. claims: 55-62

delta-9-tetrahydrocannabivarin (THCV)  
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6. claims: 63-77

cannabigerol (CBG)  
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7. claims: 78-90

cannabichromene(CBC)  
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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 03/04078

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